FILE 'CAPLUS' ENTERED AT 12:48:49 ON 24 MAY 2005

L1	4555	S	TRANSGLUTAMINASE
L2	250724	S	CROSSLINK?
L3	42099	S	CROSS LINK?
L4	1438	S	L1 AND (L2 OR L3)
L5	23522	S	HYALURON?
L6	8	S	L4 AND L5
L7	85753	S	POLYSACCHARIDE
L8	14469	S	GLYCOSAMINOGLYCAN
L9	98908	S	L7 OR L8
L10	19	S	L4 AND L9
L11	17	S	L10 NOT L6
L12	1825600	S	POLYMER?
L13	258	S	L4 AND L12
L14	11406	S	BIOMATERIAL
L15	18897	S	HYDROGEL
L16	7	S	L13 AND (L14 OR L15)
L17	5	S	L16 NOT (L11 OR L6)

L6 ANSWER 1 OF 8 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:326146 CAPLUS
DOCUMENT NUMBER: 140:344964
TITLE: Biocompatible scaffolds with tissue fragments
INVENTOR(S): Binette, Francois; Hwang, Julia; Dhanaraj, Sridevi; Gosiewska, Anna
PATENT ASSIGNEE(S): Ethicon, Inc., USA
SOURCE: Eur. Pat. Appl., 36 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
EP 1410811	A1	20040421	EP 2003-256522		20031016
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK					
US 2004078090	A1	20040422	US 2003-374772		20030225
CA 2445558	AA	20040418	CA 2003-2445558		20031017
JP 2004136096	A2	20040513	JP 2003-358118		20031017
PRIORITY APPLN. INFO.:			US 2002-419539P	P	20021018
			US 2002-420093P	P	20021018
			US 2003-374772	A	20030225

AB A biocompatible tissue repair implant or scaffold device is provided for use in repairing a variety of tissue injuries, particularly injuries to cartilage, ligaments, tendons, and nerves. The repair procedures may be conducted with implants that contain a biol. component that assists in healing or tissue repair. The biocompatible tissue repair implants include a biocompatible scaffold and particles of living tissue, such that the tissue and the scaffold become associated The particles of living tissue contain one or more viable cells that can migrate from the tissue and populate the scaffold. Healthy cartilage tissue from articulating joints was obtained from bovine shoulders. The cartilage tissue, which was substantially free of bone tissue, was minced using scalpel blades to obtain small tissue fragments in the presence of 0.2% collagenase. The minced tissue was then distributed uniformly on a synthetic bioresorbable polycaprolactone/polyglycolic acid scaffold. Cells migrate extensively into the polymer scaffolds from the minced cartilage tissue fragments. The migrating cells retain their phenotype and produce matrix that stained pos. for the sulfated glycosaminoglycans by using the Safranin O stain.
REFERENCE COUNT: 3 THERE ARE 3 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 2 OF 8 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:326145 CAPLUS
DOCUMENT NUMBER: 140:344963
TITLE: Biocompatible scaffold for ligament or tendon repair
INVENTOR(S): Binette, Francois; Hwang, Julia; Zimmerman, Mark; Melican, Mora Carolynne
PATENT ASSIGNEE(S): Ethicon, Inc., USA
SOURCE: Eur. Pat. Appl., 33 pp.
CODEN: EPXXDW
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 2
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.		DATE
EP 1410810	A1	20040421	EP 2003-256320		20031007
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK					
CA 2445356	AA	20040418	CA 2003-2445356		20031017
JP 2004136097	A2	20040513	JP 2003-358132		20031017
PRIORITY APPLN. INFO.:			US 2002-419539P	P	20021018
			US 2002-420093P	P	20021018
			US 2003-374754	A	20030225

AB A biocompatible ligament repair implant or scaffold device is provided for use in repairing a variety of ligament tissue injuries. The repair procedures may be conducted with ligament repair implants that contain a biol. component that assists in healing or tissue repair. The biocompatible ligament repair implants include a biocompatible scaffold and particles of viable tissue derived from ligament tissue or tendon

tissue, such that the tissue and the scaffold become associated The particles of living tissue contain 1 or more viable cells that can migrate from the tissue and populate the scaffold. Healthy cartilage tissue from articulating joints was obtained from bovine shoulders. The cartilage tissue, which was substantially free of bone tissue, was minced using scalpel blades to obtain small tissue fragments in the presence of 0.2% collagenase. The minced tissue was then distributed uniformly on a synthetic bioresorbable polycaprolactone/polyglycolic acid scaffold. Cells migrate extensively into the polymer scaffolds from the minced cartilage tissue fragments. The migrating cells retain their phenotype and produce matrix that stained pos. for the sulfated glycosaminoglycans by using the Safranin O stain.

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 3 OF 8 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:41292 CAPLUS
DOCUMENT NUMBER: 140:117377
TITLE: Compositions of **hyaluronic** acid for treatment of dryness
INVENTOR(S): Svirkin, Yuri; Parsa, Ramine; Zingerman, Dmitry
PATENT ASSIGNEE(S): Pericor Science, Inc., USA
SOURCE: PCT Int. Appl., 95 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004004744	A1	20040115	WO 2003-US21034	20030703
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2491054	AA	20040115	CA 2003-2491054	20030703
PRIORITY APPLN. INFO.:			US 2002-393954P P	20020703
			WO 2003-US21034 W	20030703

AB The invention provides compns. for the treatment of disorders characterized by dryness, including dry eye and dry mouth. The compns. commonly comprise a conjugate of **hyaluronic** acid and polylysine. These conjugates are attached to affected body tissues or surfaces using **transglutaminase**, and preferably endogenous **transglutaminase**. For example, an in vivo administration of polylysine conjugated to **hyaluronic** acid to rabbit eyes resulted in attachment of polylysine to rabbit cornea for at least 1 h, with no eye irritation.

REFERENCE COUNT: 1 THERE ARE 1 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 4 OF 8 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:741097 CAPLUS
DOCUMENT NUMBER: 138:16527
TITLE: New Gelatin-Based Hydrogels via Enzymatic Networking
AUTHOR(S): Crescenzi, Vittorio; Francescangeli, Andrea; Taglienti, Anna
CORPORATE SOURCE: Department of Chemistry, University La Sapienza, Rome, Italy
SOURCE: Biomacromolecules (2002), 3(6), 1384-1391
CODEN: BOMAF6; ISSN: 1525-7797
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English

AB New types of hydrogels have been obtained starting from high bloom purified gelatin A, alone or in mixts. with **hyaluronan** and with a **hyaluronan** derivative bearing primary amino groups, by **transglutaminase**-catalyzed **crosslinking**. The reticulation process, carried out adopting two different temperature protocols, and the ensuing materials have been characterized in terms of rheol. estimated

gel times, equilibrium swelling in water and in phosphate buffer solution (PBS), and rigidity modulus. Main structural and conformational factors governing the physicochem. properties and the possible application of the new hydrogels are discussed.

REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 5 OF 8 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:644803 CAPLUS
DOCUMENT NUMBER: 138:216266
TITLE: SAGE identification of differentiation responsive genes in P19 embryonic cells induced to form cardiomyocytes in vitro
AUTHOR(S): Anisimov, Sergey V.; Tarasov, Kirill V.; Riordon, Daniel; Wobus, Anna M.; Boheler, Kenneth R.
CORPORATE SOURCE: National Institute on Aging, Gerontology Research Center, Laboratory of Cardiovascular Science, National Institutes of Health, Baltimore, MD, 21224, USA
SOURCE: Mechanisms of Development (2002), 117(1-2), 25-74
CODEN: MEDVE6; ISSN: 0925-4773
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Transcriptome profiling facilitates the identification of developmentally regulated genes. To quantify the functionally active genome of P19 embryonic carcinoma (EC) cells induced to form cardiomyocytes, the authors employed serial anal. of gene expression (SAGE) to sequence and compare a total of 171,735 SAGE tags from three libraries (undifferentiated P19 EC cells, differentiation days 3+0.5 and 3+3.0). After in vitro differentiation, only 3.1% of the gene products demonstrated significant ($P<0.05$) changes in expression. The most highly significant changes ($P<0.01$) involved altered expression of 410 genes encoding predominantly transcription factors, differentiation factors and growth regulators. Quant. polymerase chain reaction anal. and in situ hybridization revealed five growth regulators (Dlk1, Igfbp5, Hmga2, Podxl and Ptn) and two unknown ESTs with expression profiles similar to known cardiac transcription factors, implicating these growth regulators in cardiac differentiation. These SAGE libraries thus serve as a reference resource for understanding the role of differentiation-dependent genes in embryonic stem cell models induced to form cardiomyocytes in vitro.

REFERENCE COUNT: 58 THERE ARE 58 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 6 OF 8 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:209960 CAPLUS
DOCUMENT NUMBER: 132:256070
TITLE: Functionalized derivatives of **hyaluronic** acid and formation of hydrogels in situ using same
INVENTOR(S): Aeschlimann, Daniel; Bulpitt, Paul
PATENT ASSIGNEE(S): UK
SOURCE: PCT Int. Appl., 65 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000016818	A1	20000330	WO 1999-EP6913	19990917
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
US 6630457	B1	20031007	US 1998-156829	19980918
CA 2344215	AA	20000330	CA 1999-2344215	19990917
AU 9961922	A1	20000410	AU 1999-61922	19990917
EP 1115433	A1	20010718	EP 1999-948783	19990917
EP 1115433	B1	20041208		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				

AT 284229	E	20041215	AT 1999-948783	19990917
US 2004072793	A1	20040415	US 2003-680000	20031006
PRIORITY APPLN. INFO.:			US 1998-156829 A	19980918
			WO 1999-EP6913 W	19990917

AB Methods for chemical modification of **hyaluronic** acid, formation of amine or aldehyde functionalized **hyaluronic** acid, and the **crosslinking** thereof to form hydrogels are provided. Functionalized **hyaluronic** acid hydrogels of this invention can be polymerized in situ, are biodegradable, and can serve as a tissue adhesive, a tissue separator, a drug delivery system, a matrix for cell cultures, and a temporary scaffold for tissue regeneration. **Hyaluronic** acid derivs. prepared include hydrazideo di-Me acetal, aminoacetaldehyde di-Me acetal, diaminoethane, L-lysine Me ester, and L-histidine Me ester. Examples of formation of **crosslinked hyaluronic** acid hydrogels were given.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L6 ANSWER 7 OF 8 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:236493 CAPLUS
DOCUMENT NUMBER: 130:257200
TITLE: Cosmetic and topical preparations containing epidermal **transglutaminase** activators
INVENTOR(S): Yamamoto, Tsukasa; Fukayama, Takashi
PATENT ASSIGNEE(S): Lisbran K. K., Japan
SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 11100320	A2	19990413	JP 1997-263676	19970929
PRIORITY APPLN. INFO.:			JP 1997-263676	19970929

AB Title prepns. contain (a) epidermal **transglutaminase** activators chosen from Ca pantetheinesulfonate (I), Ca pantothenate, Ca gluconate, and Ca glycerophosphate and optional (b) sulfhydryl oxidase activators chosen from I, glutathione, taurines, and cystines. The prepns. promote **crosslinking** in epidermal keratin fibers to prevent disorders caused by exogenous irritants. A cosmetic lotion was prepared from I 0.1, glycerin 5.0, EtOH 5.0, **hyaluronic** acid 0.05, polyoxyethylene hydrogenated castor oil 0.5, pH adjuster, perfume, preservative, and H2O to 100 weight%.

L6 ANSWER 8 OF 8 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1996:169192 CAPLUS
DOCUMENT NUMBER: 124:242346
TITLE: Covalent bonding of active agents to skin, hair or nails by **transglutaminase** for pharmaceutical and cosmetic compositions
INVENTOR(S): Richardson, Norman K.; Schilling, Kurt M.; Pocalyko, David J.; Bailey, Peter L.
PATENT ASSIGNEE(S): Chesebrough-Pond's USA Co., USA
SOURCE: U.S., 12 pp.
CODEN: USXXAM
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 5490980	A	19960213	US 1994-314178	19940928
PRIORITY APPLN. INFO.:			US 1994-314178	19940928
OTHER SOURCE(S):	MARPAT 124:242346			

AB **Transglutaminase crosslinks** proteins by catalyzing the formation of isopeptide bonds between lysine and glutamine residues. **Transglutaminase** may be used to **crosslink** beneficial actives containing an amine moiety to glutamine residues in skin, hair or nails. A variety of beneficial actives, e.g., sunscreens, antimicrobial compds., skin conditioning agents, hair conditioning agents, anti-inflammatory compds., antioxidants, coloring agents, perfumes, insect repellents, can thus be delivered to human skin, hair, or nails. Human corneocytes treated with cadaverine (I) and **transglutaminase**

contained 55.0 as compared to 17.4 pmol I/mg cells in controls treated with only I. A skin lotion contained **hyaluronic** acid 1.5, **transglutaminase** 1.0, perfumes 0.1, hydroxyethyl cellulose 0.4, absolute ethanol 25, p-Me benzoate 0.2, and water q.s. 100%.

L11 ANSWER 1 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2005:386360 CAPLUS
TITLE: Biomimetic approach to biomaterials: Amino acid-residue-specific enzymes for protein grafting and **cross-linking**
AUTHOR(S): Chen, Fianhong; Small, David A.; McDermott, Martin K.; Bentley, William E.; Payne, Gregory F.
CORPORATE SOURCE: Center for Biosystems Research, University of Maryland Biotechnology Institute, College Park, MD, 20742-4450, USA
SOURCE: ACS Symposium Series (2005), 900(Polymer Biocatalysis and Biomaterials), 107-118
CODEN: ACSMC8; ISSN: 0097-6156
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Nature creates a range of functional materials using proteins and **polysaccharides** as starting materials, and enzymes as assembly catalysts. Inspired by nature, we are examining how proteins and **polysaccharides** can be enzymically assembled into conjugates and **crosslinked** networks. Specifically, we used tyrosinase to conjugate proteins to the **polysaccharide** chitosan, and a microbial **transglutaminase** to catalyze protein **crosslinking**. We review results from our studies and suggest how the unique properties of the resulting biomaterials can be exploited in medical applications.
REFERENCE COUNT: 36 THERE ARE 36 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 2 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:964631 CAPLUS
DOCUMENT NUMBER: 141:401039
TITLE: Processes for producing medical device with polymer coatings comprising **crosslinking** agents and therapeutic agents
INVENTOR(S): Epstein, Samuel J.; Naimark, Wendy
PATENT ASSIGNEE(S): USA
SOURCE: U.S. Pat. Appl. Publ., 8 pp.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2004224080	A1	20041111	US 2003-430165	20030506
WO 2004098671	A2	20041118	WO 2004-US14283	20040506
WO 2004098671	A3	20041216		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRIORITY APPLN. INFO.: US 2003-430165 A 20030506
AB The present invention relates to a method for furnishing a therapeutic-agent-containing medical device. The method comprises: (a) providing a reactive layer comprising a **crosslinking** agent on a medical device surface; and (b) subsequently applying a polymer-containing layer, which comprises a polymer and a therapeutic agent, over the reactive layer. The **crosslinking** agent interacts with the polymer to form a **cross-linked** polymeric region that comprises the therapeutic agent. Examples of medical devices include implantable or insertable medical devices, for example, catheters, balloon, cerebral aneurysm filler coils, arterio-venous shunts and stents.

L11 ANSWER 3 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:657843 CAPLUS
TITLE: Enzymatic grafting and **crosslinking** for

adding value to biopolymers
AUTHOR(S): Payne, Gregory F.; Wu, Li Qun
CORPORATE SOURCE: Center for Biosystems Research, University of Maryland Biotechnology Institute, College Park, MD, 20742-4450, USA
SOURCE: Abstracts of Papers, 228th ACS National Meeting, Philadelphia, PA, United States, August 22-26, 2004 (2004), IEC-043. American Chemical Society: Washington, D. C.
CODEN: 69FTZ8
DOCUMENT TYPE: Conference; Meeting Abstract
LANGUAGE: English

AB Biol. serves as a model for the construction of high performance and environmentally benign materials. Typically, these materials are constructed from proteins and **polysaccharides** through biocatalytic routes. We are examining how enzymes can be exploited to graft side groups and side chains onto the **polysaccharide** chitosan. Specifically, natural phenols, peptides, and proteins can be grafted onto the chitosan backbone using the enzyme tyrosinase. These grafted polymers offer a variety of interesting properties. For instance, protein-chitosan conjugates have been observed to have pH-responsive properties characteristic of chitosan. Also, we are examining the **crosslinking** of proteins using the enzyme **transglutaminase**. This enzyme is capable of converting protein-based solns. into three-dimensional hydrogel networks. Thus, enzymes can add value to renewable biopolymers by upgrading their functional properties.

L11 ANSWER 4 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:777435 CAPLUS
DOCUMENT NUMBER: 139:296919
TITLE: Growth factor modified protein matrices for tissue repair, regeneration, remodeling and/or drug delivery
INVENTOR(S): Hubbell, Jeffrey A.; Schense, Jason C.; Sakiyama-Elbert, Shelly E.; Jen, Anna
PATENT ASSIGNEE(S): Eidgenossische Technische Hochschule Zurich Universitat Zurich, Switz.
SOURCE: U.S. Pat. Appl. Publ., 38 pp., Cont.-in-part of U.S. Ser. No. 563,760.
CODEN: USXXCO
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 7
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 2003187232	A1	20031002	US 2002-323046	20021217
US 6894022	B1	20050517	US 2000-563760	20000501
US 2003166833	A1	20030904	US 2002-325021	20021218
PRIORITY APPLN. INFO.:			US 1998-141153	B2 19980827
			US 2000-563760	A2 20000501
			US 2001-24918	A2 20011218
			WO 2002-EP12458	A 20021107
			US 2002-323046	A2 20021217

AB Proteins are incorporated into protein or **polysaccharide** matrixes for use in tissue repair, regeneration and/or remodeling and/or drug delivery. The proteins can be incorporated so that they are released by degradation of the matrix, by enzymic action and/or diffusion. As demonstrated by the examples, one method is to bind heparin to the matrix by either covalent or non-covalent methods, to form a heparin-matrix. The heparin then non-covalently binds heparin-binding growth factors to the protein matrix. Alternatively, a fusion protein can be constructed which contains a **crosslinking** region such as a factor XIIIa substrate and the native protein sequence. Incorporation of degradable linkages between the matrix and the bioactive factors can be particularly useful when long-term drug delivery is desired, for example in the case of nerve regeneration, where it is desirable to vary the rate of drug release spatially as a function of regeneration, e.g. rapidly near the living tissue interface and more slowly farther into the injury zone. Addnl. benefits include the lower total drug dose within the delivery system, and spatial regulation of release which permits a greater percentage of the drug to be released at the time of greatest cellular activity.

L11 ANSWER 5 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:723363 CAPLUS
DOCUMENT NUMBER: 139:232173

TITLE: Fishing baits comprising **crosslinked** proteins and sugars
INVENTOR(S): Niimura, Takumi; Kimura, Shuzo; Yuki, Hiroyuki; Ishii, Toshihiro
PATENT ASSIGNEE(S): Kanro Co., Ltd., Japan; Saneigen F.F.I. Inc.
SOURCE: Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003259767	A2	20030916	JP 2002-64858	20020311
PRIORITY APPLN. INFO.:			JP 2002-64858	20020311

AB The baits, which are harmless and show good degradability, colorability, and processability, comprise enzymically **crosslinked** proteins and water-insol. **polysaccharides** and/or nonpolysaccharides. Thus, water-swelled 2000 parts Gel Up J 3557 (gelatin) was mixed with malt syrup 1330, granulated sugar 1000, and Avicel RC 591 (cellulose) 500 parts and treated with Activa TG-S (**transglutaminase**) to give a gel bait.

L11 ANSWER 6 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:637351 CAPLUS
TITLE: Amino acid-residue-specific enzymes for protein grafting and **crosslinking**
AUTHOR(S): Payne, Gregory F.; Chen, Tianhong; McDermott, Martin K.; Small, David A.; Bentley, William E.
CORPORATE SOURCE: Center for Biosystems Research, University of Maryland Biotechnology Institute, College Park, MD, 20742-4450, USA
SOURCE: Abstracts of Papers, 226th ACS National Meeting, New York, NY, United States, September 7-11, 2003 (2003), POLY-471. American Chemical Society: Washington, D. C.
CODEN: 69EKY9
DOCUMENT TYPE: Conference; Meeting Abstract
LANGUAGE: English

AB We are examining two enzymes with the goal of expanding the types of reactions that can be exploited for enzymic polymer modification. The first enzyme, tyrosinase oxidizes accessible tyrosyl residues of proteins. These residues are converted into reactive o-quinone residues that can undergo subsequent non-enzymic reactions. We use tyrosinase to "activate" proteins for grafting onto nucleophilic amines of the **polysaccharide** chitosan. Tyrosinase-initiated reactions between the protein gelatin and chitosan yield a gel network that has distinct mech. properties. Both gelatin and chitosan are integral to the behavior of the tyrosinase-catalyzed gelatin-chitosan gel network. Tyrosinase was also used to graft the more compact Green Fluorescent Protein (GFP) onto chitosan. The resulting GFP-chitosan conjugate was fluorescent and had pH-responsive properties characteristic of chitosan. Thus, tyrosinase provides a means to generate protein-**polysaccharide** conjugates with hybrid properties. The second enzyme is a microbial **transglutaminase** that can **crosslink** proteins through lysyl and glutamyl residues. These covalent **crosslinks** are permanent and the gels do not melt with increasing temperature Initial studies demonstrate that **transglutaminase** can in situ entrap viable bacterial cells within a **cross-linked** gel network. In summary, tyrosinase and **transglutaminase** provide unique opportunities to generate biopolymer-based structures with distinct functional properties. We are currently examining these materials for medical and biosensor applications.

L11 ANSWER 7 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:357948 CAPLUS
DOCUMENT NUMBER: 140:8553
TITLE: Enzyme-catalyzed gel formation of gelatin and chitosan: potential for in situ applications
AUTHOR(S): Chen, Tianhong; Embree, Heather D.; Brown, Eleanor M.; Taylor, Maryann M.; Payne, Gregory F.
CORPORATE SOURCE: Biotechnology Institute, Center for Biosystems Research, University of Maryland, College Park, MD, 20742, USA
SOURCE: Biomaterials (2003), 24(17), 2831-2841

CODEN: BIMADU; ISSN: 0142-9612
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The authors compared the ability of two enzymes to catalyze the formation of gels from solns. of gelatin and chitosan. A microbial **transglutaminase**, currently under investigation for food applications, was observed to catalyze the formation of strong and permanent gels from gelatin solns. Chitosan was not required for **transglutaminase**-catalyzed gel formation, although gel formation was faster, and the resulting gels were stronger if reactions were performed in the presence of this **polysaccharide**. Consistent with **transglutaminase**'s ability to covalently **crosslink** proteins, the authors observed that the **transglutaminase**-catalyzed gelatin-chitosan gels lost the ability to undergo thermally reversible transitions (i.e. sol-gel transitions) characteristic of gelatin. Mushroom tyrosinase was also observed to catalyze gel formation for gelatin-chitosan blends. In contrast to **transglutaminase**, tyrosinase-catalyzed reactions did not lead to gel formation unless chitosan was present (i.e. chitosan is required for tyrosinase-catalyzed gel formation). Tyrosinase-catalyzed gelatin-chitosan gels were observed to be considerably weaker than **transglutaminase**-catalyzed gels. Tyrosinase-catalyzed gels were strengthened by cooling below gelatin's gel-point, which suggests that gelatin's ability to undergo a collagen-like coil-to-helix transition is unaffected by tyrosinase-catalyzed reactions. Further, tyrosinase-catalyzed gelatin-chitosan gels were transient as their strength (i.e. elastic modulus) peaked at about 5 h after which the gels broke spontaneously over the course of 2 days. The strength of both **transglutaminase** -catalyzed and tyrosinase-catalyzed gels could be adjusted by altering the gelatin and chitosan compns. Potential applications of these gels for in situ applications are discussed.
REFERENCE COUNT: 98 THERE ARE 98 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 8 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:123065 CAPLUS
DOCUMENT NUMBER: 138:152621
TITLE: Hot taste-masked food microcapsules containing capsaicin or capsaicinoids, and foods and beverages containing them
INVENTOR(S): Tachiba, Hideki; Mihara, Satoru; Nakanishi, Sanemichi
PATENT ASSIGNEE(S): Ogawa and Co., Ltd., Japan; Japan Capsular Products Inc.
SOURCE: Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DOCUMENT TYPE: Patent
LANGUAGE: Japanese
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003047432	A2	20030218	JP 2001-235998	20010803
PRIORITY APPLN. INFO.:			JP 2001-235998	20010803

AB Title microcapsules, useful for antiobesity foods, comprise capsaicin (I)- or capsaicinoid-containing edible fat/oil with m.p. -15 to 60° as a core and a wall membrane formed by protein and coacervation agent, and **crosslinked** by **transglutaminase** (II). Thus, I dissolved in hydrogenated palm oil (m.p. 30°) was added to aqueous gelatin, and mixed with H2O. Aqueous Na metaphosphate was added to the mixture, cooled, treated with Activa TG-S (II) at 30° for 18 h, filtered, and dried to give microcapsules containing 48% oil. A syrup containing the microcapsules had no hot taste.

L11 ANSWER 9 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:816702 CAPLUS
DOCUMENT NUMBER: 135:376688
TITLE: Growth factor modified protein matrices for tissue engineering
INVENTOR(S): Hubbell, Jeffrey A.; Schense, Jason C.; Sakiyama-elbert, Shelly E.
PATENT ASSIGNEE(S): Eidgenossisch Technische Hochschule Zurich, Switz.
SOURCE: PCT Int. Appl., 51 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent

LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001083522	A2	20011108	WO 2000-US11947	20000501
WO 2001083522	A3	20020328		
W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2407952	AA	20011108	CA 2000-2407952	20000501
EP 1280566	A2	20030205	EP 2000-928733	20000501
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL				
JP 2003535055	T2	20031125	JP 2001-580946	20000501
PRIORITY APPLN. INFO.:			WO 2000-US11947 W	20000501

AB Proteins are incorporated into protein or **polysaccharide** matrixes for use in tissue repair, regeneration and/or remodeling and/or drug delivery. The proteins can be incorporated so that they are released by degradation of the matrix, by enzymic action and/or diffusion. As demonstrated by the examples, one method is to bind heparin to the matrix by either covalent or non-covalent methods, to form a heparin-matrix. The heparin then non-covalently binds heparin-binding growth factors to the protein matrix. Alternatively, a fusion protein can be constructed which contains a **crosslinking** region such as a factor XIIIa substrate and the native protein sequence. Incorporation of degradable linkages between the matrix and the bioactive factors can be particularly useful when long-term drug delivery is desired, for example in the case of nerve regeneration, where it is desirable to vary the rate of drug release spatially as a function of regeneration, e.g. rapidly near the living tissue interface and more slowly farther into the injury zone. Addnl. benefits include the lower total drug dose within the delivery system, and spatial regulation of release which permits a greater percentage of the drug to be released at the time of greatest cellular activity.

L11 ANSWER 10 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2001:23423 CAPLUS
DOCUMENT NUMBER: 134:315968
TITLE: Triggered release of calcium from lipid vesicles: a bioinspired strategy for rapid gelation of **polysaccharide** and protein hydrogels
AUTHOR(S): Westhaus, E.; Messersmith, P. B.
CORPORATE SOURCE: Biomedical Engineering Department, Northwestern University, Evanston, IL, 60208, USA
SOURCE: Biomaterials (2001), 22(5), 453-462
CODEN: BIMADU; ISSN: 0142-9612
PUBLISHER: Elsevier Science Ltd.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The bioinspired strategy of triggered release of Ca2+ from liposomal compartments was used to induce rapid gelation of **polysaccharide** and protein-based hydrogels. Thermally triggerable liposomes were designed by entrapping CaCl2 within liposomes constructed of 90% dipalmitoylphosphatidylcholine and 10% dimyristoylphosphatidylcholine. These liposomes released greater than 90% of entrapped Ca2+ when heated to 37°C. A precursor fluid containing liposomes suspended in aqueous sodium alginate remained fluid for several days at room temperature but gelled rapidly when heated to 37°C, as a result of Ca2+ release and formation of **crosslinked** Ca-alginate. Alternatively, thermally triggered Ca2+ release from liposomes was used to activate enzyme-catalyzed **crosslinking** of proteins to form hydrogels. A mixture of Ca-loaded liposomes, fibrinogen, and a Ca2+-dependent **transglutaminase** enzyme (either human recombinant FXIII or guinea pig liver **transglutaminase**) remained fluid indefinitely when stored at room temperature, but gelled rapidly when heated to 37°C. SDS-PAGE of the reaction mixture revealed that gelation was due to enzymic **crosslinking** of the α and γ chains of fibrinogen, and oscillating rheometry revealed gel formation within 10 min of heating to 37°C. This new approach may be useful for developing rapidly

gelling injectable biomaterials that can be stored at room temperature and injected in a minimally invasive manner into a body tissue or cavity, upon which rapid solidification would occur. This versatile bioinspired strategy could be utilized for the delivery of biomaterials for tissue repair and reconstruction, and local site-directed drug delivery.

REFERENCE COUNT: 40 THERE ARE 40 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 11 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:707277 CAPLUS
DOCUMENT NUMBER: 133:263223
TITLE: Preparation of linker-free covalently **crosslinked** purple membrane-bound bacteriorhodopsin using **transglutaminase** for photoelectric application
INVENTOR(S): Hampp, Norbert; Seitz, Arne; Pasternack, Ralf; Fuchsbauer, H. L.
PATENT ASSIGNEE(S): Fuchsbauer, H.-L., Germany
SOURCE: PCT Int. Appl., 35 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: German
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2000058450	A1	20001005	WO 2000-EP2904	20000331
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
DE 19914702	A1	20001005	DE 1999-19914702	19990331
WO 2000059731	A1	20001012	WO 2000-EP2905	20000331
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2368698	AA	20010112	CA 2000-2368698	20000331
EP 1165764	A1	20020102	EP 2000-929335	20000331
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
EP 1171309	A1	20020116	EP 2000-917031	20000331
EP 1171309	B1	20030502		
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
JP 2002540988	T2	20021203	JP 2000-609269	20000331
AU 758715	B2	20030327	AU 2000-38171	20000331
AT 238912	E	20030515	AT 2000-917031	20000331
PT 1171309	T	20030930	PT 2000-917031	20000331
ES 2199155	T3	20040216	ES 2000-917031	20000331
RU 2240923	C2	20041127	RU 2001-129295	20000331
US 6616964	B1	20030909	US 2002-937963	20020108

PRIORITY APPLN. INFO.:

DE 1999-19914702	A	19990331
DE 1999-19953607	A	19991108
WO 2000-EP2904	W	20000331
WO 2000-EP2905	W	20000331

AB The invention concerns a method for the preparation of linker-free covalently **crosslinked** bacteriorhodopsin that uses the purple membrane-bound bacteriorhodopsin as a substrate for **transglutaminase** for producing the covalently **crosslinking** species. Wildtype bacteriorhodopsin, its mutants and analogs, e.g. halorhodopsin, sensorrodopsin, bacteriorhodopsins with altered retinal compns. are used, and also their mixts. Bacteriorhodopsins have one or more binding sites for tranglutaminase. **Transglutaminase** of bacterial origin is used that does not require cofactors. **Crosslinking** is

terminated by increasing the temperature to 80°C. Bacteriorhodopsins can be **crosslinked** with conducting polymers, dyes, fluorochromes, lipids, peptides, nucleic acids, lectins, **polysaccharides** and other conductive materials. The **crosslinked** polymers are used as photoelec. materials, e.g. for three-dimensional data storage.
REFERENCE COUNT: 9 THERE ARE 9 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 12 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:55667 CAPLUS
DOCUMENT NUMBER: 132:193403
TITLE: Improvement of the physical properties of pepsin-solubilized elastin-collagen film by **crosslinking**
AUTHOR(S): Takahashi, Koji; Nakata, Yoshikadzu; Someya, Kenji; Hattori, Makoto
CORPORATE SOURCE: Department of Applied Biological Science, Faculty of Agriculture, Tokyo University of Agriculture and Technology, Tokyo, 183-8509, Japan
SOURCE: Bioscience, Biotechnology, and Biochemistry (1999), 63(12), 2144-2149
CODEN: BBBIEJ; ISSN: 0916-8451
PUBLISHER: Japan Society for Bioscience, Biotechnology, and Agrochemistry
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Pepsin-solubilized elastin (PSE)-conjugated collagen film was prepared from a collagen matrix with PSE by drying it and **crosslinking** the constituents with water-soluble carbodiimide or microbial **transglutaminase** to improve the phys. properties of the collagen film. The **crosslinking** reduced the solubility and improved the thermal stability, the thermal transition properties, and the elasticity of the control film in water. In particular, water-soluble carbodiimide strongly influenced these properties. The PSE-conjugated collagen film showed good permeation by water-soluble tasting substances such as oligosaccharides and amino acids, but poor permeation by **polysaccharide**, protein, and hydrophobic substances such as retinol and cholesterol.
REFERENCE COUNT: 16 THERE ARE 16 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 13 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1999:723159 CAPLUS
DOCUMENT NUMBER: 131:324167
TITLE: Laundry detergent and/or fabric care compositions comprising a modified transferase
INVENTOR(S): Smets, Johan; Barnabas, Mary Vijayarani; Showell, Michael Stanford; Boyer, Stanton Lane; Convents, Andre Christian
PATENT ASSIGNEE(S): Procter & Gamble Co., USA
SOURCE: PCT Int. Appl., 106 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9957258	A1	19991111	WO 1998-US8905	19980501
W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, GW, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, SD, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
AU 9874709	A1	19991123	AU 1998-74709	19980501
CA 2330488	AA	19991111	CA 1999-2330488	19990430
WO 9957254	A1	19991111	WO 1999-US9480	19990430
W: AE, AL, AM, AT, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ, DE, DE, DK, DK, EE, EE, ES, FI, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU,				

ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM
RW: GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG

AU 9939683	A1	19991123	AU 1999-39683	19990430
EP 1075509	A1	20010214	EP 1999-922758	19990430
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, PT, IE, FI				
BR 9910147	A	20011002	BR 1999-10147	19990430
JP 2002513563	T2	20020514	JP 2000-547210	19990430
US 6410498	B1	20020625	US 2000-674472	20001111
PRIORITY APPLN. INFO.:			WO 1998-US8905 A	19980501
			WO 1999-US9480 W	19990430

AB The present invention relates to a modified enzyme which comprises a catalytically active amino acid sequence of a transferase linked to an amino acid sequence comprising a Cellulose Binding Domain (CBD). A specific embodiment comprises CBD-transferase, which is dextransucrase or **transglutaminase** or Toruzyme linked by PEG(NPC)2 to the cellulose-binding domain Cellulozome from Clostridium cellulovorans. The laundry detergent and/or fabric care composition preferably further comprises a detergent ingredient selected from an anionic surfactant (alkyl sulfate, alkyl ethoxy sulfate, linear alkylene sulfonate), nonionic surfactant (alkyl ethoxylate), cationic surfactants, enzymes (protease, cellulase, lipase, amylase), bleaching agents, dye transfer inhibiting agents, dispersants, and smectite clay. The present invention further relates to laundry detergent and/or fabric care compns. comprising such modified enzyme, for improved fabric care and cleaning benefits.

REFERENCE COUNT: 6 THERE ARE 6 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 14 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1998:752424 CAPLUS
DOCUMENT NUMBER: 129:342845
TITLE: Improvement of the functional properties of sorghum protein by protein-**polysaccharide** and protein-protein complexes
AUTHOR(S): Babiker, E. E.; Kato, A.
CORPORATE SOURCE: Dep. Biological Chem., Yamaguchi Univ., Yamaguchi, 753, Japan
SOURCE: Nahrung (1998), 42(5), 286-289
CODEN: NAHRAR; ISSN: 0027-769X
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English

AB To improve the functional properties, sorghum protein (Sorghum bicolor) was conjugated with dextran or galactomannan at 60°, 79% relative humidity, or **crosslinked** with **transglutaminase** (TGase). During SDS-PAGE, conjugated and **crosslinked** proteins had higher mol. mass bands above the stacking gel. Although sorghum protein and its **polysaccharide** mixture were insol. at pH 4-6, the **polysaccharide** conjugates were soluble at all pHs, despite being composed of higher mol. sizes. **Polysaccharide** conjugates were completely soluble even after heating at 90° for 20 min, while TGase-treated samples suppressed heat-induced aggregation up to 60 °. The emulsifying properties of the **polysaccharide** conjugates and TGase treated samples were greatly improved.

L11 ANSWER 15 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1998:580411 CAPLUS
DOCUMENT NUMBER: 129:215884
TITLE: Masking of antigen structure of soybean protein by conjugation with **polysaccharide** and **cross-linkage** with microbial **transglutaminase**
AUTHOR(S): Babiker, E. F. E.; Matsudomi, N.; Kato, A.
CORPORATE SOURCE: Dep. Biological Chemistry, Yamaguchi Univ., Yamaguchi, 753, Japan
SOURCE: Nahrung (1998), 42(3-4), 158-159
CODEN: NAHRAR; ISSN: 0027-769X
PUBLISHER: Wiley-VCH Verlag GmbH
DOCUMENT TYPE: Journal
LANGUAGE: English

AB The effect of **polysaccharide** conjugation and **transglutaminase** (TGase) treatment was investigated withon the allergenic protein in soybean. Soy protein (acid-precipitated protein, APP)-galactomannan conjugated and TGase-treated soy protein showed higher mol. weight bands in SDS-PAGE. To identify the most allergenic protein, soy

proteins were separated by gel cutting and extraction Polyclonal antibodies were raised in rabbits. Results of ELISA and immunoblotting showed that only the 34 kDa protein strongly cross-reacted with the antibody. To estimate the effect of modifications on the allergenicity of soy protein, antibody titers were monitored by ELISA against APP, the chymotrypsin digest (APPC), TGase polymer, and APP-galactomannan conjugates. APPC was still allergenic, while the TGase treatment slightly reduced the allergenicity of APP, whereas galactomannan conjugates greatly reduced the allergenicity of APP. The protein-**polysaccharide** conjugation is more effective than TGase treatment and protease digestion to mask the allergenic structure.

L11 ANSWER 16 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:354497 CAPLUS
DOCUMENT NUMBER: 127:79239
TITLE: Differential modulation of cell adhesion by interaction between adhesive and counter-adhesive proteins: characterization of the binding of vitronectin to osteonectin (BM40, SPARC)
AUTHOR(S): Rosenblatt, Sylvia; Bassuk, James A.; Alpers, Charles E.; Sage, E. Helene; Timpl, Rupert; Preissner, Klaus T.
CORPORATE SOURCE: Haemostasis Res. Unit, Kerckhoff Clinic, Max Planck Inst., Bad Nauheim, D-61231, Germany
SOURCE: Biochemical Journal (1997), 324(1), 311-319
CODEN: BIJOAK; ISSN: 0264-6021
PUBLISHER: Portland Press
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Heparin-binding forms of vitronectin, a multifunctional adhesive glycoprotein, are associated with the extracellular matrix (ECM) at different locations in the body and serve to promote cell adhesion and the regulation of pericellular proteolysis at sites of angiogenesis. In the present study, we characterized the interactions of vitronectin with the counter-adhesive protein osteonectin (also termed SPARC or BM40). Osteonectin and vitronectin were both found associated with the ECM of cultured endothelial cells and were localized in vessel wall sections of kidney tissue. In vitro, the heparin-binding multimeric isoform of vitronectin bound to immobilized osteonectin in a saturable manner with half-maximal binding at 30-40 nM. Preincubation of plasma vitronectin with plasminogen activator inhibitor 1 (PAI-1), which provoked multimer formation, induced the binding of vitronectin to osteonectin. Binding was optimal at physiol. ionic strength, and binary complexes were stabilized by tissue **transglutaminase**-mediated **crosslinking**. In a concentration-dependent fashion, PAI-1, CaCl2, heparin, and heparan sulfate, but not other **glycosaminoglycans**, interfered with the binding of vitronectin to osteonectin. Using vitronectin-derived synthetic peptides as well as mutant forms of recombinant osteonectin, we found that the heparin-binding region of vitronectin interacted with the C-terminal region of osteonectin that contains a high-affinity Ca2+-binding site with counter-adhesive properties. Adhesion of cultured endothelial cells was partially abrogated by osteonectin and was correspondingly reversed by vitronectin in a concentration-dependent manner. These results indicate that specific interactions between vitronectin and osteonectin modulate cell adhesion and might thereby regulate endothelial cell function during angiogenesis.
REFERENCE COUNT: 46 THERE ARE 46 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 17 OF 17 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1990:154233 CAPLUS
DOCUMENT NUMBER: 112:154233
TITLE: Highly sulfated **glycosaminoglycans** augment the **cross-linking** of vitronectin by guinea pig liver **transglutaminase**. Functional studies of the **cross-linked** vitronectin multimers
AUTHOR(S): Sane, David C.; Moser, Tammy L.; Parker, Charles J.; Seiffert, Dietmar; Loskutoff, David J.; Greenberg, Charles S.
CORPORATE SOURCE: Med. Cent., Duke Univ., Durhamn, NC, 27710, USA
SOURCE: Journal of Biological Chemistry (1990), 265(6), 3543-8
CODEN: JBCHA3; ISSN: 0021-9258
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Vitronectin (VN) is an adhesive glycoprotein with roles in the complement,

coagulation, and immune systems. Many of the functions of VN are mediated by a **glycosaminoglycan**-binding site, near its C-terminal end. In this paper, it is shown that the highly sulfated **glycosaminoglycans** (GAGs), dextran sulfate, pentosan polysulfate, and fucoidan effectively augment [14C]putrescine incorporation into VN and **crosslinking** of VN into high mol. multimers by guinea pig liver **transglutaminase** (TG). Other GAGs including heparin, low-mol.-weight heparin, dermatan sulfate, keratan sulfate, and the nonsulfated dextrans were ineffective in accelerating these reactions. Dextran sulfate of average mol. mass 500 kDa was more effective than dextran sulfate of average mol. mass 5 kDa, supporting a template mechanism of action of the GAGs, in which VN mols. align on the GAG in a conformation suitable for **crosslinking** . The VN multimers catalyzed by TG retained functional activity in binding [3H]heparin, platelets, and plasminogen activator inhibitor type-1 (PAI-1). [3H]heparin bound selectively to the 65-kDa monomeric band of VN and to the multimers derived from this band. PAI-1, however, bound equally to both the 75- and 65-kDa monomeric forms of VN, suggesting that the PAI-1-binding site on VN is distinct from the GAG-binding site. The interactions of GAGs with the TG-catalyzed **crosslinking** of VN may facilitate studies of VN structure-function relationships.

L17 ANSWER 1 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2004:413096 CAPLUS
DOCUMENT NUMBER: 141:5887
TITLE: Injectable bioadhesive **polymeric** **hydrogels** as well as related methods of enzymatic preparation
INVENTOR(S): Messersmith, Phillip B.; Hu, Bi-Huang
PATENT ASSIGNEE(S): Northwestern University, USA
SOURCE: PCT Int. Appl., 43 pp.
CODEN: PIXXD2
DOCUMENT TYPE: Patent
LANGUAGE: English
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2004042068	A2	20040521	WO 2003-US34633	20031031
W: CA, JP				
RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
US 2004265951	A1	20041230	US 2003-699584	20031031
PRIORITY APPLN. INFO.:			US 2002-422569P P	20021031

AB Biomimetic gels via enzymic preparation, using a **transglutaminase** to **crosslink** **polymer**-peptide conjugates of rational design, are claimed.

L17 ANSWER 2 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2003:851596 CAPLUS
DOCUMENT NUMBER: 140:65073
TITLE: Rational Design of **Transglutaminase** Substrate Peptides for Rapid Enzymatic Formation of **Hydrogels**
AUTHOR(S): Hu, Bi-Huang; Messersmith, Phillip B.
CORPORATE SOURCE: Biomedical Engineering Department, Northwestern University, Evanston, IL, 60208, USA
SOURCE: Journal of the American Chemical Society (2003), 125(47), 14298-14299
CODEN: JACSAT; ISSN: 0002-7863
PUBLISHER: American Chemical Society
DOCUMENT TYPE: Journal
LANGUAGE: English
AB Short peptide substrates with high specificity toward **transglutaminase** (TGase) enzyme were designed, characterized, and coupled to a biocompatible **polymer**, allowing for rapid enzymic **crosslinking** of peptide-**polymer** conjugates into **hydrogels**. Eight acyl acceptor Lys-peptide substrates and three acyl donor Gln-peptide substrates were rationally designed and synthesized. The kinetic consts. of these peptides toward tissue **transglutaminase** were measured by enzyme assay using RP-HPLC anal. with the aid of LC-ESI/MS. Several acyl donor and acyl acceptor peptides with high specificities toward TGase were identified, including a few containing the unusual amino acid L-3,4-dihydroxylphenylalanine (DOPA), which is found in the adhesive proteins secreted by marine and freshwater mussels. Acyl donor and acyl acceptor peptides with high substrate specificities were sep. coupled to branched poly(ethylene glycol) (PEG) **polymer** mols. Equimolar solns. of these **polymer**-peptide conjugates rapidly formed **hydrogels** in less than 2 min in the presence of **transglutaminase** under physiol. conditions. The use of biocompatible building blocks, their rapid solidification from a liquid precursor under physiol. conditions, and the ability to incorporate adhesive amino acid residues using biol. benign enzymic **crosslinking** are advantageous properties for the use of such materials for tissue repair, drug delivery, and tissue engineering applications.
REFERENCE COUNT: 27 THERE ARE 27 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 3 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2002:26975 CAPLUS
DOCUMENT NUMBER: 137:190353
TITLE: Demonstration of tightening efficiency of an active ingredient containing milk proteins **crosslinked** by **transglutaminase** **polymerization**

AUTHOR(S): Anon.
CORPORATE SOURCE: UK
SOURCE: Research Disclosure (2001), 452(Dec.), P2054 (No. 452076)
CODEN: RSDSBB; ISSN: 0374-4353
PUBLISHER: Kenneth Mason Publications Ltd.
DOCUMENT TYPE: Journal; Patent
LANGUAGE: English
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
RD 452076		20011210		
PRIORITY APPLN. INFO.:			RD 2001-452076	20011210

AB The tightening effect of a formulation containing **crosslinked** milk proteins was measured ex vivo by the gas bearing electrodynamometer method. A tightening effect of the milk protein **crosslinked** by acrylate/C10-30 alkyl acrylate copolymer dosed at 5% in a **hydrogel** was demonstrated on skin biopsies.

L17 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 2000:872249 CAPLUS
DOCUMENT NUMBER: 134:152597
TITLE: Role of the **cross-linking** enzyme tissue **transglutaminase** in the biological recognition of synthetic biodegradable **polymers**
AUTHOR(S): Verderio, Elisabetta; Coombes, Allan; Jones, Richard A.; Li, Xiaoling; Heath, Deborah; Downes, Sandra; Griffin, Martin
CORPORATE SOURCE: Department of Life Sciences, Nottingham Trent University, Nottingham, NG11 8NS, UK
SOURCE: Journal of Biomedical Materials Research (2000), Volume Date 2001, 54(2), 294-304
CODEN: JBMRBG; ISSN: 0021-9304
PUBLISHER: John Wiley & Sons, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English
AB The calcium-dependent **crosslinking** enzyme tissue **transglutaminase** (tTgase, type II) is a potential novel player at the cell surface, where its contribution to cell adhesion and stabilization of the extracellular matrix is becoming increasingly recognized. We investigated whether tTgase enhances the biol. recognition of poly(DL-lactide-co-glycolide) (PLG), poly(ε-caprolactone) (PCL), and poly(L-lactide) (PLA), **biomaterials** widely used in medical implants. Three cell-model systems consisting of human osteoblasts, endothelial cells (ECV-304), and Swiss 3T3 fibroblasts were utilized, in which tTgase expression was modulated by gene transfer, and the ability of cells to spread on these **polymers** was quantified in relation to the altered level of expressed tTGase. Results show that over-expression of tTgase in human osteoblasts pos. correlated with cell spreading on PLG, while no attachment and spreading was found on PCL and PLA. Antisense silencing of tTgase in the endothelial cells led to a marked reduction of cell spreading on all **polymers**. The hydrophobic nature of PLC also appeared to favor endothelial cell attachment. Spreading of Swiss 3T3 fibroblasts on these **biomaterials** was only slightly affected by increased expression of tTgase, although cell spreading on control glass was increased. We propose that the consideration of tTgase-mediated bioactivity in novel **biomaterials** may improve cell attachment and promote biocompatibility.
REFERENCE COUNT: 51 THERE ARE 51 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L17 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
ACCESSION NUMBER: 1997:532635 CAPLUS
DOCUMENT NUMBER: 127:221296
TITLE: Synthesis and Characterization of Enzymically-**Crosslinked** Poly(ethylene glycol) **Hydrogels**
AUTHOR(S): Sperinde, Jeffrey J.; Griffith, Linda G.
CORPORATE SOURCE: Department of Chemical Engineering and Center for Biomedical Engineering, Massachusetts Institute of Technology, Cambridge, MA, 02139-4307, USA
SOURCE: Macromolecules (1997), 30(18), 5255-5264
CODEN: MAMOBX; ISSN: 0024-9297
PUBLISHER: American Chemical Society

DOCUMENT TYPE: Journal
LANGUAGE: English

AB We demonstrate formation of a **hydrogel** network by **crosslinking** functionalized poly(ethylene glycol) (PEG) and a lysine-containing polypeptide through the action of a natural tissue enzyme, **transglutaminase**. The enzyme reaction rate using a PEG-modified peptide substrate is the same as the reaction rate for free substrate. Both the ratio and total concentration of the two macromers determine whether gelation will occur and the nature of the gel which forms. Under suitable conditions, clear gels form and swell to give a final composition which is 90% water. Diffusion coeffs. of small proteins and albumin in the gel are comparable to those in free solution Gelation proceeds under mild conditions and thus these gels hold potential for forming highly hydrated networks around living cells.

REFERENCE COUNT: 53 THERE ARE 53 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	11	"5856299"	US-PGPUB; USPAT	OR	ON	2005/05/24 11:42
L2	22	"5597897"	US-PGPUB; USPAT	OR	ON	2005/05/24 11:54
L3	4593	transaminase	US-PGPUB; USPAT	OR	ON	2005/05/24 11:57
L4	800827	peptide substrate	US-PGPUB; USPAT	OR	ON	2005/05/24 11:54
L5	374	3 same 4	US-PGPUB; USPAT	OR	ON	2005/05/24 11:54
L6	1802	transglutaminase	US-PGPUB; USPAT	OR	ON	2005/05/24 11:57
L7	635	4 same 6	US-PGPUB; USPAT	OR	ON	2005/05/24 12:03
L8	231838	crosslink$4 (cross adj link$4)	US-PGPUB; USPAT	OR	ON	2005/05/24 12:04
L9	716	6 same 8	US-PGPUB; USPAT	OR	ON	2005/05/24 12:04
L10	18789	hyaluron$4 (acidic same polysaccharide) glycosaminoglycan	US-PGPUB; USPAT	OR	ON	2005/05/24 12:05
L11	156	9 and 10	US-PGPUB; USPAT	OR	ON	2005/05/24 12:06
L12	150	4 and 11	US-PGPUB; USPAT	OR	ON	2005/05/24 12:12
L13	150	8 and 12	US-PGPUB; USPAT	OR	ON	2005/05/24 12:12

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	3815	hyaluron$4	EPO; JPO; DERWENT	OR	ON	2005/05/24 08:38
L2	64706	conjugat$6 bioconjugate	EPO; JPO; DERWENT	OR	ON	2005/05/24 08:38
L3	148152	crosslink$4 (cross adj link$4)	EPO; JPO; DERWENT	OR	ON	2005/05/24 08:38
L4	3279	covalent$4 and attach$6	EPO; JPO; DERWENT	OR	ON	2005/05/24 08:38
L5	448	1 and (2 3 4)	EPO; JPO; DERWENT	OR	ON	2005/05/24 08:39
L6	672022	ester carbodiimide activat$6	EPO; JPO; DERWENT	OR	ON	2005/05/24 08:39
L7	97	5 and 6	EPO; JPO; DERWENT	OR	ON	2005/05/24 09:03
L8	351	5 not 7	EPO; JPO; DERWENT	OR	ON	2005/05/24 09:03
L9	494610	hydrogel cartilage orthopedic joint tissue	EPO; JPO; DERWENT	OR	ON	2005/05/24 09:04
L10	135	8 and 9	EPO; JPO; DERWENT	OR	ON	2005/05/24 09:04